

Applied Radiation and Isotopes

Volume 53, 2000

List of Contents, Author, and Subject Indexes



PERGAMON

APPLIED RADIATION AND ISOTOPES

EDITORS-IN-CHIEF

B. M. COURSEY

*Ionizing Radiation Division, C229, RADP,
National Institute of Standards and Technology
Gaithersburg, MD 20899, U.S.A.
Fax: +1 301 869 7682
E-mail: pamela.hodge@nist.gov*

D. M. TAYLOR

*Cardiff University, Department of Chemistry,
P.O. Box 912, Cardiff CF1 3TB,
Wales, U.K.
Fax: +44 2920 670 413
E-mail: davtay@globalnet.co.uk*

EDITORS

- D. A. BRADLEY, *School of Physics, University of Exeter, Stocker Road, Exeter EX4 4QL, Devon, UK. E-mail: D.A. Bradley@exeter.ac.uk*
- J. CSIKAI, *Institute of Experimental Physics, Kossuth University, Pf. 105, Bem ter 18/a, H-4001 Debrecen, Hungary. E-mail: csikai@falcon.phys.klte.hu*
- K. DEBERTIN, *Homburgstraße 14, D-38116 Braunschweig, Germany. E-mail: klaus.debertin@t-online.de*
- R. P. GARDNER, *Center for Engineering Applications of Radioisotopes, North Carolina State University, Box 7909, Raleigh, NC 27695-7909, U.S.A. E-mail: gardner@ncsu.edu*
- J. J. M. DE GOEIJ, *Delft University of Technology, Interfaculty Reactor Institute, Mekelweg 15, 2629 JB Delft, The Netherlands. E-mail: j.j.m.deGoeij@IRI.TU Delft.nl*
- F. F. KNAPP, *Life Sciences Division, Mail Stop 6229, Building 4501, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6229, U.S.A. E-mail: jkp@ornl.gov*
- A. KUDO, *Research Reactor Institute, University of Kyoto, Kyoto, Japan. E-mail: kudo@rri.kyoto-u.ac.jp*
- W. L. McLAUGHLIN, *Ionizing Radiation Division, Mail Stop 8460, National Institute of Standards and Technology, Gaithersburg, MD 20899-8460, U.S.A. E-mail: william.mclaughlin@nist.gov*
- P. MITCHELL, *Department of Experimental Physics, National University of Ireland, Dublin (NUID), Belfield, Dublin 4, Republic of Ireland. E-mail: peter.mitchell@ucd.ie*
- V. W. PIKE, *Molecular Imaging Branch, National Institute of Mental Health, Building 1, Room B3-10, 1 Center Drive, Bethesda, MD 20892-0135, U.S.A. E-mail: victor.pike@nih.gov*
- R. SCHNEIDER, *Mail Stop 8, Geology and Geophysics Department, Woods Hole Oceanographic Institution, Woods Hole, MA 02543-1539, U.S.A. E-mail: rschneider@whoi.edu*
- J. S. SCHWEITZER, *41 Silver Hill Road, Ridgefield, CT 06877, U.S.A. E-mail: schweitz@phys.uconn.edu*
- B. SOWERBY, *Program Manager, Process, Design & Optimisation, CSIRO Minerals, PMB5, Menai, NSW 2234, Australia. E-mail: brian.sowerby@minerals.csiro.au*
- T. TOMINAGA, *Department of Chemistry, Faculty of Science, University of Tokyo, Bunkyo-ku, Tokyo, Japan*
- L. I. WIEBE, *Faculty of Pharmacy and Pharmaceutical Sciences, 3118 Pharmacy Center, University of Alberta, Edmonton, Canada T6G 2N8. E-mail: leonard.wiebe@ualberta.ca*

© 2001 Elsevier Science Ltd. All rights reserved.

Author Service Department

For queries relating to the general submission of articles (including electronic text and artwork) and the status of accepted manuscripts, please contact the Author Service Department: E-mail: authors@elsevier.co.uk; Fax: +44 (0) 1865 843905; Tel: +44 (0) 1865 843900.

Frequency: Published monthly in 2 volumes of 6 issues

Publication information: Applied Radiation and Isotopes (ISSN 0969-8043). For 2001, volumes 54-55 are scheduled for publication. Subscription prices are available upon request from the Publisher or from the Regional Sales Office nearest you or from this journal's website (<http://www.elsevier.nl/locate/apradiso>). Further information is available on this journal and other Elsevier Science products through Elsevier's website: (<http://www.elsevier.nl>). Subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Issues are sent by standard mail (surface within Europe, air delivery outside Europe). Priority rates are available upon request. Claims for missing issues should be made within six months of the date of dispatch.

Orders, claims, and product enquiries: please contact the Customer Support Department at the Regional Sales Office nearest you: **New York:** Elsevier Science, PO Box 945, New York, NY 10159-0945, USA; phone: (+1) (212) 633 3730 [toll free number for North American customers: 1-888-4ES-INFO (437-4636)]; fax: (+1) (212) 633 3680; e-mail: usinfo-fa@elsevier.com **Amsterdam:** Elsevier Science, PO Box 211, 1000 AE Amsterdam, The Netherlands; phone: (+31) 20 4853757; fax: (+31) 20 4853432; e-mail: nlinfo-fa@elsevier.nl **Tokyo:** Elsevier Science, 9-15 Higashi-Azabu 1-chome, Minato-ku, Tokyo 106-0044, Japan; phone: (+81) (3) 5561 5033; fax: (+81) (3) 5561 5047; e-mail: info@elsevier.co.jp **Singapore:** Elsevier Science, No. 1 Temasek Avenue, #17-01 Millenia Tower, Singapore 039192; phone: (+65) 434 3727; fax: (+65) 337 2230; e-mail: asiainfo@elsevier.com.sg **Rio de Janeiro:** Elsevier Science, Rua Sete de Setembro 111/16 Andar, 20050-002 Centro, Rio de Janeiro - RJ, Brazil; phone: (+55) (21) 509 5340; fax: (+55) (21) 507 1991; e-mail: elsevier@campus.com.br [Note (Latin America): for orders, claims and help desk information, please contact the Regional Sales Office in New York as listed above]

Periodicals postage is paid at Rahway, New Jersey, Applied Radiation and Isotopes (ISSN 0969-8043) is published monthly in 2 volumes of 6 issues by Elsevier Science Ltd., The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK. The annual subscription in the USA is \$2088. Applied Radiation and Isotopes is circulated by Mercury International Limited, 365 Blair Road, Avenel, NJ 07001, USA. POSTMASTER: Please send address corrections to: Applied Radiation and Isotopes, c/o customer Services, Elsevier Science Inc., 655, Avenue of the Americas, New York, NY 10010, USA.

CONTENTS OF VOLUME 53

(Numbers 1-2)

Proceedings of the ICRM Low-level Radioactivity Measurement Techniques Conference

<i>Editorial</i>	1
<i>Foreword</i>	3

Invited Papers

M. Bickel, L. Holmes, C. Janzon, G. Koulouris, R. Pilviö, B. Slowikowski and C. Hill	5 Radiochemistry: inconvenient but indispensable
Paul De Bièvre and Dietmar F. G. Reher	13 Traceability of measurements of radioactivity and of amount of substance
Joachim Schulze, Matthias Auer and Robert Werzi	23 Low level radioactivity measurement in support of the CTBTO
Michael Hotchkis, David Fink, Claudio Tuniz and Stephan Vogt	31 Accelerator mass spectrometry analyses of environmental radio-nuclides: sensitivity, precision and standardisation

Session 1—Theory

F. Legarda and M. Herranz	39 Measurement of ^{137}Cs in dust from steel scrap smelting
Christian Hurtgen, Simon Jerome and Mike Woods	45 Revisiting Currie — how low can you go?
Octavian Sima and Dirk Arnold	51 Accurate computation of coincidence summing corrections in low level gamma-ray spectrometry
J.-M. Laborie, G. Le Petit, D. Abt and M. Girard	57 Monte Carlo calculation of the efficiency calibration curve and coincidence-summing corrections in low-level gamma-ray spectro-metry using well-type HPGe detectors

Session 2—Mass Spectrometry and Sampling

L. Holmes and R. Pilvio	63 Determination of thorium in environmental and workplace materials by ICP-MS
S. Uchida, K. Tagami, W. Rühm, M. Steiner and E. Wirth	69 Separation of Tc-99 in soil and plant samples collected around the Chernobyl reactor using a Tc-selective chromatographic resin and determination of the nuclide by ICP-MS
K. Tagami, S. Uchida, T. Hamilton and W. Robison	75 Measurement of technetium-99 in Marshall Islands soil samples by ICP-MS
J. M. López-Gutiérrez, H.-A. Synal, M. Suter, Ch. Schnabel and M. García-León	81 Accelerator mass spectrometry as a powerful tool for the determination of ^{129}I in rainwater
M. Magara, Y. Hanzawa, F. Esaka, Y. Miyamoto, K. Yasuda, K. Watanabe, S. Usuda, H. Nishimura and T. Adachi	87 Development of analytical techniques for ultra trace amounts of nuclear materials in environmental samples using ICP-MS for safeguards
M. Fernández-Díaz, A. J. Quejido, M. T. Crespo, L. Pérez del Villar, A. Martín-Sánchez and J. C. Lozano	91 Uranium isotopic data in uraninite spent fuel from the Bangombé natural nuclear reactor (Gabon) and its surroundings

Session 3—Alpha Radiometrics

- | | | |
|--|-----|--|
| Heinz Surbeck | 97 | Alpha spectrometry sample preparation using selectively adsorbing thin films |
| A. Courti, F. Goutelard, P. Burger and E. Blotin | 101 | Development of a β -spectrometer using PIPS technology |

Session 4—NORM and TENR

- | | | |
|---|-----|---|
| M. T. Crespo | 109 | On the determination of ^{226}Ra in environmental and geological samples by α -spectrometry using ^{223}Ra as yield tracer |
| Guogang Jia, Maria Belli, Massimo Blasi, Andrea Marchetti, Silvia Rosamilia and Umberto Sansone | 115 | ^{210}Pb and ^{210}Po determination in environmental samples |
| J. W. Mietelski and W. Męczyński | 121 | Application of a low-background gamma-ray spectrometer to the determination of ^{90}Sr |
| P. Chiozzi, P. De Felice, A. Fazio, V. Pasquale and M. Verdoya | 127 | Laboratory application of NaI(Tl) γ -ray spectrometry to studies of natural radioactivity in geophysics |
| W. C. Lawrie, J. A. Desmond, D. Spence, S. Anderson and C. Edmondson | 133 | Determination of radium-226 in environmental and personal monitoring samples |

Session 5—Fission Product Radiochemistry

- | | | |
|---|-----|--|
| J. J. Mateos, E. Gómez, F. Garcias, M. Casas and V. Cerdà | 139 | Rapid $^{90}\text{Sr}/^{90}\text{Y}$ determination in water samples using a sequential injection method |
| F. Goutelard, R. Nazard, C. Bocquet, N. Coquenlorge, P. Letessier and D. Calmet | 145 | Improvement in ^{90}Sr measurements at very low levels in environmental samples |
| E. Holm, T. Gäfvert, P. Lindahl and P. Roos | 153 | In situ sorption of technetium using activated carbon |
| M. Aoyama, K. Hirose, T. Miyao and Y. Igarashi | 159 | Low level ^{137}Cs measurements in deep seawater samples |
| Naomi Spry, Susan Parry and Simon Jerome | 163 | The development of a sequential method for the determination of actinides and ^{90}Sr in power station effluent using extraction chromatography |

Session 6—Gamma Radiometrics

- | | | |
|---|-----|---|
| S. Neumaier, D. Arnold, J. Böhm and E. Funck | 173 | The PTB underground laboratory for dosimetry and spectrometry |
| K. Abbas, D. Gilliland and M. F. Stroosnijder | 179 | Radioactivity measurements for the thin layer activation technique |
| P. Vojtyla and P. P. Povinec | 185 | A Monte Carlo simulation of background characteristics of low-level HPGe detectors |
| H. Neder, G. Heusser and M. Laubenstein | 191 | Low level γ -ray germanium-spectrometer to measure very low primordial radionuclide concentrations |
| M. Köhler, A. V. Harms and D. Alber | 197 | Determination of Zn in high-purity GaAs with neutron activation analysis |

M. Köhler, B. Gleisberg and S. Niese	203	Investigation of the soil–plant transfer of primordial radionuclides in tomatoes by low-level γ -ray spectrometry
M. Gysemans and H. Moors	209	Determination of ^{75}Se , ^{95}Zr , ^{237}Np and ^{241}Am activities in Boom Clay samples from laboratory migration experiments using γ -ray spectrometry
P. Chiozzi, V. Pasquale, M. Verdoya and P. De Felice	215	Practical applicability of field γ -ray scintillation spectrometry in geophysical surveys
A. Luca, P. De Felice and G. Tanase	221	Low level gamma spectrometry by beta–gamma coincidence
Mikael Hult, Maria José Martínez Canet Matthias Köhler, José das Neves and Peter N. Johnston	225	Recent developments in ultra low-level γ -ray spectrometry at IRMM
Thomas Riedel, Roger V. Hentig and Franz V. Feilitzsch	231	Anticompton spectrometer element studies

Session 7—Quality and Standards

D. Glavič-Cindro, M. Korun and B. Vodenik	237	Quality assurance of automated gamma-ray spectrometric analysis
P. de Lavison, L. J. Husband, S. M. Jerome, J. D. Keightley, A. P. Woodman, D. H. Woods and S. A. Woods	243	The standardisation of ^{229}Th for an environmental yield tracer

Session 8—Actinide Radiochemistry

J. W. Mietelski, P. Gaca and M. Jasińska	251	Plutonium and other alpha-emitters in bones of wild, herbivorous animals from north-eastern Poland
M. P. Rubio Montero, A. Martín Sánchez, M. T. Crespo Vázquez and J. L. Gascón Murillo	259	Analysis of plutonium in soil samples
D. K. Modna, S. M. Jerome, M. A. White and M. J. Woods	265	Thorium in the workplace measurement intercomparison
Riitta Pilviö and Michael Bickel	273	Actinoid separations by extraction chromatography
G. Koulouris, B. Slowikowski, R. Pilviö, T. Bostrom and M. Bickel	279	Pre-concentration of actinoids from waters: a comparison of various sorbents

Session 9—Scintillation Counting Techniques

F. Verrezen and C. Hurtgen	289	A multiple window deconvolution technique for measuring low-energy beta activity in samples contaminated with high energy beta impurities using liquid scintillation spectrometry
P. Theodorsson	297	A multi-sample liquid scintillation counting system for weak beta-emitting samples with single phototube detectors
I. A. Kashirin, A. I. Ermakov, S. V. Malinovskiy S. V. Belanov, Yu. A. Sapozhnikov, K. M. Efimov, V. A. Tikhomirov and A. I. Sobolev	303	Liquid scintillation determination of low level components in complex mixtures of radionuclides

I. Schäfer, D. Hebert and U. Zeiske

309 On low-level tritium measurements with LSC Quantulus

Session 10—Decommissioning and Safeguards

R. Carchon, M. Bruggeman and I. Majkowski

317 Non-destructive assay methods for the free release of dismantling wastes

Michel Klein and Sven Moers

323 The free release of dismantled materials. The practical case of the BR3 reactor

I. Auler, E. Neukäter, M. Franz and B. Krebs

331 Release measurements for materials out of controlled areas

J. C. Lozano, F. Vera Tomé, V. Gómez Escobar
and P. Blanco Rodríguez

337 Radiological characterization of a uranium mine with no mining activity

L. M. Robredo, T. Navarro and I. Sierra

345 Indirect monitoring of internal exposure in the decommissioning of a nuclear power plant in Spain

Pavel Dryák, Petr Kovář and Jiří Šurán

351 Experience with checking potentially contaminated materials released to the environment and testing of the measuring instruments used

A. Alvarez, E. Correa, N. Navarro and C. Sancho

355 Uranium determination in samples from decommissioning of nuclear facilities related to the first stage of the nuclear fuel cycle

Session 11—RadonJ. Paridaens, H. Vanmarcke, K. Jacobs and
Z. Zunic361 Retrospective radon assesment by means of ^{210}Po activity measurementsM. Pugliese, G. Baiano, A. Boiano,
A. D'Onofrio, V. Roca, C. Sabbarese and
P. Vollaro

365 A compact multiparameter acquisition system for radon concentration studies

W. Rau and G. Heusser

371 ^{222}Rn emanation measurements at extremely low activities

Gudjon I. Gudjonsson and Pall Theodorsson

377 A compact automatic low-level liquid scintillation system for radon-in water measurement by pulse pair counting

Session 12—BioassayC. Dinse, N. Baglan, C. Cossonnet and
C. Bouvier

381 New purification protocol for actinide measurement in excreta based on calixarene chemistry

G. Gualdrini, P. Battisti, R. Biagini,
P. De Felice, A. Fazio and P. Ferrari

387 Development and characterization of a head calibration phantom for in vivo measurements of actinides

Announcement

395

List of Participants

397

Author Index

409

(Number 3)**Radiochemistry and Radionuclide Applications**M. Asikoglu, F. Yurt, O. Cagliyan, P. Unak
and H. Ozkilic411 Detecting inflammation with ^{131}I -labeled ornidazole

D. M. Hill, R. K. Barnes, H. K. Y. Wong
and A. W. Zawadzki

- 415 The quantification of technetium in generator-derived per-technetate using ICP-MS

Radiation Sources and Applications

Nikolai A. Lebedev, Alexander F. Novgorodov,
Riscard Misiak, Jörg Brockmann and
Frank Rösch

- 421 Radiochemical separation of no-carrier-added ^{177}Lu as produced via the $^{176}\text{Yb}(n,\gamma)^{177}\text{Yb} \rightarrow ^{177}\text{Lu}$ process

Y. C. Cheung, K. N. Yu, R. T. K. Ho and C. P. Yu

- 427 Stereotactic dose planning system used in Leksell Gamma Knife model-B: EGS4 Monte Carlo versus GafChromic films MD-55

Synthesis of Labelled Compounds

Sepp Seifert, Antje Drews, Antje Gupta,
Hans-Juergen Pietzsch, Hartmut Spies and
Bernd Johannsen

- 431 Stability studies on ^{99m}Tc (III) Complexes with tridentate/monodentate thiol ligands and phosphine ('3+1+1' complexes)

A. A. Naqvi, A. Aksoy, M. M. Nagadi,
M. A. Al-Ohali, S. Kidwai and O. Fageeha

- 439 Fabrication and tests of ^3He and ^2H targets for beam polarization measurement

Jin Du, Marcela Marquez, Jukka Hiltunen,
Sten Nilsson and Anders R. Holmberg

- 443 Radiolabeling of dextran with rhenium-188

Technical note

S. K. Zeisler, D. W. Becker, R. A. Pavan,
R. Moschel and H. Rühle

- 449 A water-cooled spherical niobium target for the production of $[\text{F}^{18}]$ fluoride

Radioactivity and Radiation Measurements

A. Baeza, J. Guillén, J. M. Paniagua,
S. Hernández, J. L. Martín, J. Díez,
J. L. Manjón and G. Moreno

- 455 Radiocaesium and radiostrontium uptake by fruit bodies of *Pleurotus eryngii* via mycelium, soil and aerial absorption

T. H. Wu, R. S. Liu, N. S. Chong, C. S. Tsai
and J. S. Lee

- 463 Evaluation of equivalent dose to working staff with oxygen-15-water in positron emission tomographic studies

Ulrich Schötzg

- 469 Half-life and X-ray emission probabilities of ^{55}Fe

Nuclear Geophysics

Tadeusz Andrzej Przylibski

- 473 Estimating the radon emanation coefficient from crystalline rocks into groundwater

(Numbers 4–5)

Proceedings of the 4th Topical Meeting on the Industrial Radiation and Radioisotope Measurement Applications (IRRMA'99)

Preface

- 481

Robin P. Gardner, El Sayyed, Yuanshui Zheng,
Stephanie Hayden and Charles W. Mayo

- 483 NaI detector neutron activation spectra for PGNAA applications

A. R. Dulloo, F. H. Ruddy, T. V. Congedo,
J. G. Seidel and M. E. McIlwain

- 499 Experimental verification of modeling results for a PGNAA system for nondestructive assay of RCRA metals in drums

James Tickner	507	Determination of the spatial response of neutron based analysers using a Monte Carlo based method
R. P. Gardner, C. W. Mayo, E. S. El-Sayyed, W. A. Metwally, Y. Zheng and M. Poezart	515	A feasibility study of a coincidence counting approach for PGNAA applications
G. L. Molnár, Zs. Révay, T. Belgya and R. B. Firestone	527	The new prompt gamma-ray catalogue for PGAA
J. Ni, R. C. Block and X. G. Xu	535	Photon activation analysis: a proof of principle using a NIST sediment standard and an electron accelerator at Rensselaer Polytechnic Institute
A. C. Ho and E. M. A. Hussein	541	Quantification of gamma-ray Compton-scatter nondestructive testing
Tom L. Burr and Paula L. Knepper	547	A study of the effect of measurement error in predictor variables in nondestructive assay
E. M. A. Hussein and E. J. Waller	557	Landmine detection: the problem and the challenge
T. Čechák, J. Gerndt, M. Kubelik, L. Musilek and Milan Pavlik	565	Radiation methods in research of ancient monuments
C. Bonifazzi, G. Di Domenico, E. Lodi, G. Maino and A. Tartari	571	Principal component analysis of large layer density in Compton scattering measurements
Y. Shirakawa	581	A build-up treatment for thickness gauging of steel plates based on gamma-ray transmission
Yong-Deok Lee, Jong Hwa Chang, Change Hee Lee and Yi-Kyung Kim	587	Simulation of spatial fuel assay using HANARO neutron beam
G. A. Johansen and P. Jackson	595	Salinity independent measurement of gas volume fraction in oil/gas/water pipe flows
A. Sood, R. P. Gardner and T. K. Gray	603	Steady neutron source measurement method for Σ_a and Σ_s in geological samples
Frank Hensel	617	Investigation of a density measurement technique using positron radiation
William L. Dunn and Abdelfatah M. Yacout	625	Corrosion detection in aircraft by X-ray backscatter methods
L. T. Chew, D. A. Bradley, Amin Yusoff Mohd and Maah Mohd Jamil	633	Zinc, lead and copper in human teeth measured by induced coupled argon plasma atomic emission spectroscopy (ICP-AES)
Joanne M. O'Meara, Jimmy Börjesson and David R. Chettle	639	Improving the in vivo X-ray fluorescence (XRF) measurement of renal mercury
S. N. Bateman, A. Pejović-Milić, I. M. Stronach, F. E. McNeill and D. R. Chettle	647	Performance appraisals of digital spectroscopy systems for the measurement of bone lead
M. L. Arnold, F. E. McNeill, W. V. Prestwich and D. R. Chettle	651	System design for in vivo neutron activation analysis measurements of manganese in the human brain: based on Monte Carlo modeling
A. Pejović-Milić, M. L. Arnold, F. E. McNeill and D. R. Chettle	657	Monte Carlo design study for in vivo bone aluminum measurement using a low energy accelerator beam
R. T. Lopes, E. B. Costa and E. F. O. de Jesus	665	Computed tomography with monochromatic bremsstrahlung radiation
Jonathan Earnhart, Thomas Prettyman, John Lestone and Robin Gardner	673	Simulation of Compton camera imaging with a specific purpose Monte Carlo code

S. Jacobsson, A. Bäcklin, A. Håkansson and P. Jansson	681	A tomographic method for experimental verification of the integrity of spent nuclear fuel
D. A. Bradley, C. S. Wong and K. H. Ng	691	Evaluating the quality of images produced by soft X-ray units
M. Rossi, F. Casali, S. V. Golovkin and V. N. Govorun	699	Digital radiography using an EBCCD-based imaging device
E. A. Knapp, R. B. Moler, A. W. Saunders and W. P. Trower	711	Direct imaging of explosives
R. C. Barroso, R. T. Lopes, O. D. Gonçalves and E. F. O. de Jesus	717	Angle-dispersive diffraction with synchrotron radiation at Laboratório Nacional de Luz Sincrotron (Brazil): potential for use in biomedical imaging
Delson Braz, Ricardo T. Lopes and Laura M. G. da Motta	725	Computed tomography: an evaluation of the effect of adding polymer SBS to asphaltic mixtures used in paving
Sang Hoon Lee and Robin P. Gardner	731	A new G-M counter dead time model
J. M. F. dos Santos, C. M. B. Monteiro, R. E. Morgado and C. A. N. Conde	739	Energy linearity of high-purity germanium detectors in the region of the Ge K-absorption edge: experimental results
A. A. Naqvi, M. M. Nagadi, Khateeb-ur Rehman and S. Kidwai	745	Performance comparison of NE213 detectors for their application in moisture measurement
S. A. Wallace, J. M. Hiller, Sheng Dai and L. F. Miller	755	Neutron detection based upon a lithiated sol-gel glass
Mala Das, B. Roy, B. K. Chatterjee and S. C. Roy	759	A sensitive neutron dosimeter using superheated liquid
G. Gambarini, S. Agosteo, P. Marchesi, E. Nava, P. Palazzi, A. Pecci, G. Rosi and R. Tinti	765	Discrimination of various contributions to the absorbed dose in BNCT: Fricke-gel imaging and intercomparison with other experimental results
Richard A. Livingston, Habeeb H. Saleh, Robert C. Block and Peter J. Brand	773	Time-of-flight calibration of a ^6Li glass epithermal neutron detector
George H. Miley and J. Sved	779	The IEC star-mode fusion neutron source for NAA — status and next-step designs
R. C. Martin, J. B. Knauer and P. A. Balo	785	Production, distribution and applications of californium-252 neutron sources
D. M. Timus, D. A. Bradley, B. D. Timus, S. L. Kalla and H. M. Srivastava	793	Energy behaviour of neutrons generated by Witch-type distributed axisymmetrical deuteron beams accelerated onto plane tritium targets
J. M. Verbeke, K. N. Leung and J. Vujic	801	Development of a sealed-accelerator-tube neutron generator
C. K. Wang, J. F. Zino and G. Kessler	811	Enhancement of a ^{252}Cf -based neutron beam via subcritical multiplication for neutron capture therapy
A. S. Alimov, E. A. Knapp, V. I. Shvedunov and W. P. Trower	815	High-power CW LINAC for food irradiation
V. Radchenko, B. Andreichikov, H. Wänke V. Gavrilov, B. Korchuganov, R. Rieder, M. Ryabinin and T. Economou	821	Curium-244 alpha-sources for space research
Ye. A. Karelin, V. N. Efimov, V. T. Filimonov, R. A. Kuznetsov, Yu. L. Revyakin, O. I. Andreev, I. Yu. Zhemkov, V. G. Bukh, V. M. Lebedev and Ye. N. Spiridonov	825	Radionuclide production using a fast flux reactor

V. M. Lebedev, J. N. Gordeev, E. A. Karelin and V. D. Gavrilov	829	Gadolinium-153 line sources
V. M. Radchenko, M. A. Ryabinin, N. N. Andreytchuk, V. D. Gavrilov and Ye A. Karelin	833	Curium-248 standard neutron source
Robin P. Gardner and Lianyan Liu	837	Monte Carlo simulation for IRRMA
John S. Hendricks, K. J. Adams, T. E. Booth, J. F. Briesmeister, L. L. Carter, L. J. Cox, J. A. Favorite, R. A. Forster, G. W. McKinney and R. E. Prael	857	Present and future capabilities of MCNP
Margaret B. Emmett	863	MORSE: present capabilities and future directions
C. Oliveira, J. Salgado, M. Luisa Botelho and L. M. Ferreira	867	Monte Carlo studies for irradiation process planning at the Portuguese gamma irradiation facility
S. A. Ghanem	877	Monte Carlo calculations of the response features for NaI detectors
J. Ghassoun and A. Jehouani	881	Russian roulette efficiency in Monte Carlo resonant absorption calculations
A. Jehouani, R. Ichaoui and M. Boulkheir	887	Study of the NaI(Tl) efficiency by Monte Carlo method
N. Takeda, K. Kudo, T. Sugita, G. Dietze and X. Yang	893	Monte Carlo simulation of gamma-ray response functions for a proportional counter used for neutron measurement
A. Jehouani, C. Ichaoui and M. Boulkheir	897	Convergence acceleration of neutronic Monte Carlo calculations
A. Tartari, C. Bonifazzi, J. E. Fernandez, M. Bastiano, E. Casnati, C. Baraldi and G. Di Domenico	901	Molecular coherent scattering data for tissue in photon transport Monte Carlo codes
F. Vakhetrov, Yu. Toporov and V. Tarasov	907	Monte-Carlo simulation results for creation of a simple model for estimation of the influence of channel loading on neutron flux
W. K. Warburton, M. Momayezi, B. Hubbard-Nelson and W. Skulski	913	Digital pulse processing: new possibilities in nuclear spectroscopy
D. A. Bradley, Khairul Zaman Dahlan and S. C. Roy	921	Measurement of the viscosity of irradiated silicone using a differential viscometer
Stephanie C. Frankle, Robert C. Reedy, Phillip G. Young and William P. Madigan	929	Improvements to the photon-production data for radiative capture in ENDF
D. M. Timus, C. Cincu, D. A. Bradley, G. Craciun and E. Mateescu	937	Modification of some properties of polyamide-6 by electron beam induced grafting
V. R. K. Murty, D. P. Winkoun and K. R. S. Devan	945	Effective atomic numbers for W/Cu alloy using transmission experiments
V. R. K. Murty, K. R. S. Devan and D. P. Winkoun	949	On discrepancies in atomic photoeffect cross sections in the low photon energy region
D. M. Timus, D. A. Bradley, B. D. Timus, S. L. Kalla, H. M. Srivastava, E. G. Finantu and E. N. Mateescu	953	On the low order approximation of radiation fields generated by some hollow-cylindrical ion beams accelerated to produce exoergic nuclear reactions
A. Jehouani, M. Boulkheir and R. Ichaoui	963	On the neutrons streaming in straight duct

(Numbers 6)

Radiochemistry and Radionuclide Applications

- X. Wang, J. Tian, X. M. Yin, X. Zhang and Q. Z. Wang 969 The excretion of biotrace elements using the multitracer technique in tumour-bearing mice
- K. N. Yu, Z. J. Guan, T. Cheung, T. T. K. Cheung and T. Y. Lo 975 Light weight concrete: ^{226}Ra , ^{232}Th , ^{40}K contents and dose reduction assessment
- R. N. Acharya, R. K. Mondal, P. P. Burté, A. G. C. Nair, N. B. Y. Reddy, L. K. Reddy, A. V. R. Reddy and S. B. Manohar 981 Multi-element analysis of emeralds and associated rocks by k_0 neutron activation analysis

Synthesis of Labelled Compounds

- M. A. Majali, A. R. Mathakar, H. H. Shimpi, Sharmila Banerjee and Grace Samuel 987 Studies on the preparation and stability of samarium-153 propylene diamine tetramethylene phosphonate (PDTMP) complex as a bone seeker
- Li Qingnuan, Zhang Xiaodong, Sheng Rong and Li Wenxin 993 Preparation of (^{188}Re) Re-AEDP and its biodistribution studies

Radioactivity and Radiation Measurements

- H. J. Pant 999 Flow rate measurements in a draft tube baffle crystallizer using a radioactive flow follower technique
- Jian Xu, Xinde Bai, Jin An and Yudian Fan 1005 Effect of Ar ion irradiation on electrochemical behaviors of zircaloy-4
- R. M. Cunha e Silva, C. R. Appoloni, P. S. Parreira, F. R. Espinoza-Quñones, M. M. Coimbra and P. H. A. Aragão 1011 Two media method of for gamma ray attenuation coefficient measurement of archaeological ceramic samples

Nuclear Geophysics

- P. A. Tanner, L. S. Leong, S. M. Pan and Z. Yu 1017 Mössbauer study of sediment cores from Victoria harbour, Hong Kong
- Urszula Woźnicka 1023 Thermal neutron absorption cross section and clay mineral content for Miocene Carpathian samples



